

Hellenbrand

ProMate 1™

WATER CONDITIONING SYSTEM



Owner's Manual

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Manufactured by:

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This owner's manual is designed to assist owners and installers with the operation, maintenance and installation of your new water softener. It is our sincere hope that this manual is clear, concise and helpful to both owner and installer. We have included detailed instructions on general operating conditions, pre-installation and installation instructions, start-up, and timer and meter programming. We have included a troubleshooting guide, service instructions and parts diagrams to assist you.

Owners will appreciate the simplified, illustrated format for operation, programming and troubleshooting. **In the event that you need professional assistance for servicing your water softener, please contact the dealer who installed this system.**

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FREQUENTLY ASKED QUESTIONS

1. **Do I still use the same amount of soap in the dishwasher and clothes washer and showers now that I have a water softener?** No, the Water Quality Association states soft water can save up to 55% on detergent use. Start with using half the amount of detergent previously used, this can be adjusted up or down based on preference. Soft water helps fabrics last longer, because hardness minerals combined with soap can make fabric fibers brittle.
2. **What is the health impact of drinking soft water?** The sodium added to water by a softening is a non-issue most of the time, even for people on a sodium-restricted diet. One could soften up to 75 grains per gallon water with sodium chloride and still be well with the US Food and Drug Administration's labeling of a "Low Sodium" beverage. People on a sodium-restricted diet should consult their physician.
3. **Should I use soft water for my plants?** Some plants may be sensitive to even minute amounts of sodium. Suggest using hard water for watering plants, often a kitchen cold faucet is plumbed for hard water or the outside faucets are usually plumbed for hard water. If not, you can place your softener on bypass and fill water containers at the closest sink. Water from a reverse osmosis system can always be used to water plants.
4. **Will water spots disappear now that I have soft water?** Water spots caused by hardness scale will disappear with a functioning water softener. However, other natural minerals dissolved in the water in high enough concentrations may cause spotting. These mineral spots will be much easier to wipe away compared to hardness spotting.
5. **Will soft water cause my water or ice cubes to look or taste different?** Most people can tell the difference in taste between hard and soft water, it is a personal preference. Ice cubes will appear the same, they may look cloudy due to air in water or dissolved minerals, and this will not change because now they are made with softened water. A reverse osmosis drinking water system will provide clearer ice cubes.

Dealer Name _____ Phone _____

Address _____

JOB SPECIFICATION SHEET

MODEL NO. _____

*WATER TEST AT TIME OF INSTALLATION

_____ Hardness CaCO ₃ (gpg)	_____ Other _____
_____ Iron (ppm)	_____ Other _____
_____ pH	_____ Other _____

*SIZING INFORMATION

All Water is Softened Except:

_____ Rear Hose Bib _____ Front Hose Bib _____ Kitchen Cold _____ Toilets _____ All Cold
_____ Other _____

The average family uses 75 gallons per person daily for all water uses in the home, about 50 gallons per person daily if soft water is not supplied to the toilets, and about 30 gallons per person daily if only hot water is softened.

_____ Daily Water Usage (Gallons/Person)
x _____ Family Size (Number of people in family)
= _____ Total Gallons Per Day
x _____ Grains Per Gallon of Hardness
(Note: Add 3 grains per gallon of hardness for each ppm iron for total compensated hardness)
= _____ Total Grains Per Day

*INSTALLATION DATE _____

*SERIAL NUMBER _____

NOTES _____

SOFT WATER BASICS

Hardness

Excess amounts of calcium and magnesium in water produce hardness. A water softener removes the majority of calcium and magnesium to produce softened water.

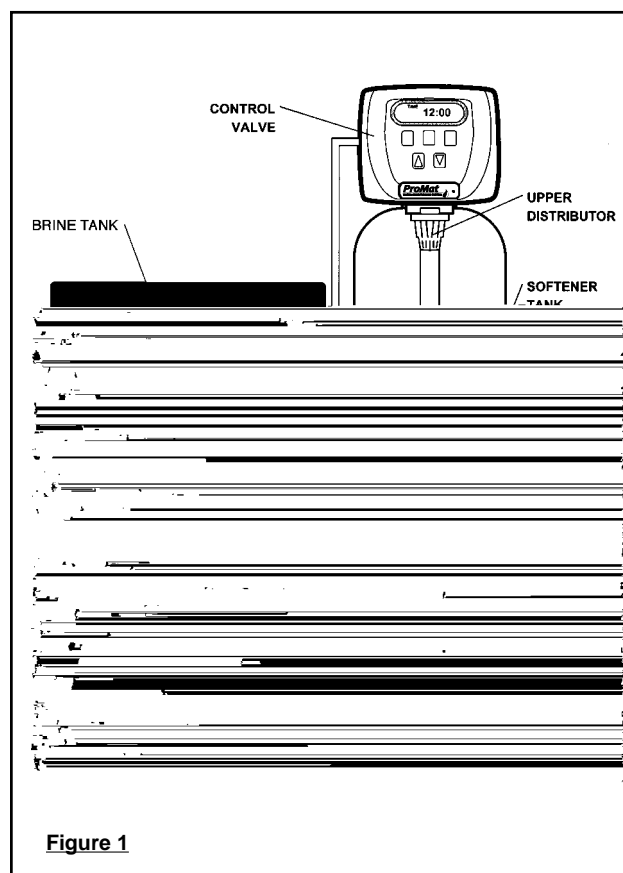
Hardness is measured in terms of grains. (This grain weight is derived from the average weight of a dry grain of wheat.) When your water is tested the grain hardness is calculated and expressed as grains per gallon (gpg). This calculation, as well as the number of people in your household will help determine what type and size of water softener will most efficiently soften your water.

Your water softener contains an ion exchange media (sometimes called resin) which removes the hardness from water as it flows through the softener tank. Eventually so much hardness collects on the exchange media that the softener can no longer soften water. At this point it is considered "exhausted". Regeneration is now necessary.

Regeneration

To regenerate the exchange media, it must be rinsed with a brine (salt) solution. This removes the hardness from the exchange media and replaces it with sodium. The exchange media is then ready to remove hardness from water. The hardness minerals and excess brine solution are rinsed down the drain.

During the regeneration cycle the softener is also backwashed. This reversing of the normal flow of water serves to remove sediment which may have accumulated during the softening process due to the filtering action of the exchange media. Backwashing also loosens and fluffs up the bed of exchange media to insure that during regeneration the brine solution will come into contact with all the media.



Maintenance of Your Softener

Salt: Salt to a softener is what gasoline is to a car. Not only must a softener have salt, but it should be the proper type to insure efficient recharging of the unit. Ask your dealer what type of salt may best suit your needs. Always have an adequate supply of salt on hand. Check the salt level of your brine tank every couple of weeks initially to determine how much salt you use - this will depend on how much water you use. As a rule of thumb, with 20 gpg hard water, about a 1/2 lb. of salt per person per day is used. In other words, a family of four uses 60 lbs. of salt a month. If your household does not use much water, do not fill your salt keeper over 1/2 full, salt bridging may occur in the brine tank. This may result in hard water due to ineffective regeneration. Fill the tank approximately three-fourths full, with a minimum of 12" of salt. **DO NOT USE Block Salt** when the ProMate control is programmed with a brine tank refill. Block salt does not dissolve quick enough to provide a good regeneration.

Cleaning Salt Keeper: Salt keeper may require periodic cleaning. Inspect the salt keeper at least once a year for buildup of insoluble materials. It is recommended to periodically clean the salt keeper no matter what kind of salt you are using. See page 9, miscellaneous #3 for details on cleaning.

REMEMBER: Salt is the fuel to run your water softener. Buy the **best clean salt available**.

OPERATING CONDITIONS

Your water conditioner has been designed to adequately handle up to 100 grains per gallon of hardness that might be encountered as well as up to 2 ppm of Ferrous Bicarbonate Iron. This is iron that is dissolved in an oxygen-free water supply. It is not visible to the eye in a freshly drawn sample because the water appears clear. But upon standing in contact with air, the ferrous iron will become oxidized to the ferric state and start to precipitate as a reddish brown floc. It can then be seen and if allowed to remain in the supply will cause discolored water. In order for your conditioner to remove the iron, air (oxygen) must

be kept from coming in contact with water until after it has been passed through the water conditioner. In some cases, additional equipment may be required to treat water supplies having special characteristics, such as: ferric hydroxide iron, iron bacteria, low pH, taste and odors, etc. If any question should exist, contact your dealer.

This water softener is not intended to be used for treating water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after treatment.

PRE-INSTALLATION CHECK LIST

(All electrical & plumbing should be done in accordance to all local codes)

Water Pressure: A minimum of 20 pounds of water pressure (psi) is required for regeneration. Maximum 120 psi.

Water Quality: On rural water supplies there is often a problem with sand or sediment in the water. (This problem occasionally occurs in public water supplies.) If the water is not filtered before being softened, the sand and sediment will plug up the water softener restricting the flow through the resin bed. This problem often requires rebedding of the mineral tank. **Note:** *Well and/or pump problems affecting the operation of the softener are repairs that are not covered under warranty. To prevent these unnecessary, and expensive repairs that are not covered under warranty, we recommend the installation of an in-line filter system ahead of softener installations.*

Electrical: A continuous 110 volt 60 cycle current supply is required. *Make certain the current supply is uninterrupted and cannot be turned off with another switch. All electrical connections must be connected per local codes.* **Surge protection is recommended with all electric controls.**

Existing Plumbing: Condition of existing plumbing must be

free from lime and iron build-up. Piping that is built-up heavily with lime and/or iron must be replaced. If piping is blocked with iron, additional equipment must be installed ahead of the water conditioner to correct the problem.

Drain Line: The conditioner should be located close to a drain. Avoid overhead drain lines if possible to prevent back pressure on the brine injector. Overhead drains are not to exceed 8 feet above the floor and no more than 20 feet in length. The pipe size for the drain line should be a minimum of 3/4". Backwash flow rates in excess of 7 gpm or length in excess of 20' require 1" drain line.

Bypass Valves: Always provide for the installation of a bypass valve.

Softening: It is recommended that the conditioner be installed to soften both the hot and cold water supply. A separate hard water faucet may be plumbed for drinking purposes if you desire. Outside faucets should be left on hard water.

Caution: Water temperature is not to exceed 110°F; the conditioner cannot be subject to freezing conditions, or to a vacuum due to loss of pressure (such as a water main break).

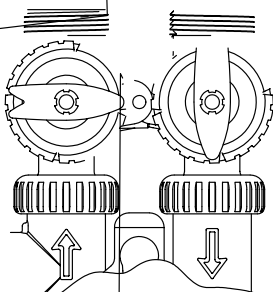


Figure 4



Figure 5

INSTALLATION INSTRUCTIONS

(All electrical & plumbing should be done in accordance to all local codes)

- Do not use vaseline, oils, other hydrocarbon lubricants or spray silicone anywhere. A silicon lubricant may be used on black o-rings but is not necessary. **Avoid any type of lubricants, including silicone, on red or clear lip seals.**
 - Do not use pipe dope or other sealants on threads. Only teflon tape may be used on threads. Teflon tape is not necessary on the nut connection or caps because of o-ring seals.
 - The pipe size for the drain line should be a minimum of 3/4". Backwash flow rates in excess of 7 gpm or length in excess of 20' require 1" drain line.
1. Place the conditioner where you want to install it, making sure it is on a clean, level and firm base.
 2. Do all necessary plumbing (inlet to inlet, outlet to outlet and drain line to drain). The control valve, fittings and/or bypass are designed to accommodate minor plumbing misalignments but are not designed to support the weight of a system or the plumbing.
 3. When assembling the installation fitting package (inlet and outlet), connect the fitting to the plumbing system first and then attach the nut, split ring and o-ring. Heat from soldering or solvent cements may damage the nut, split ring or o-ring. Solder joints should be cool and solvent cements should be set before installing the nut, split ring and o-ring. Avoid getting primer and solvent cement on any part of the o-rings, split rings, bypass valve or control valve.
 4. **A jumper ground wire should be installed between the inlet and outlet pipe whenever the metallic continuity of a water distribution piping system is interrupted. Install grounding strap on metal pipes.**
 5. The drain connection may be made using either 5/8" polytube (See figure 6a, page 5) or a 3/4" female adapter. If soldering, joints near the drain must be done prior to connecting the drain line flow control fitting. Leave at least 6" between the drain line control fitting and solder joints when soldering pipes that are connected on the drain line control fitting. Failure to do this could cause interior damage to the drain line flow control fitting.
 6. The brine refill flow control assembly is installed in an easy to access refill elbow located on top of the control valve. The refill flow control assembly is attached to the control valve with a locking clip. The locking clip allows the elbow to rotate 270 degrees so the outlet can be orientated towards the saltkeeper.
 7. Connect the brine line found in the brine tank to the brine connection on the control valve. The control valve has a standard refill elbow which a 3/8" flexible tube can be connected, see figure 6a, page 5. (An optional elbow can be ordered which accommodates a 1/2" flexible tube for a high regenerant draw rate situation). Both elbows use the same refill flow control and retainer. Do not connect the other end of the brine line to the safety brine valve in the brine tank at this time. Make sure the floor is clean beneath the salt tank and that it is level and smooth.
 8. A 1/2" (inside diameter) gravity drain line may be connected to the overflow fitting on the side of the brine tank. This overflow is in case of a malfunction in the brine shut off. If the unit is installed where water may flow in the event of an overflow and cause water damage, connect a length of flexible tubing and run to a drain below the level of the overflow. **(Do not connect the tubing to the drain line on the control valve. Do not run tubing above overflow height at any point.)**

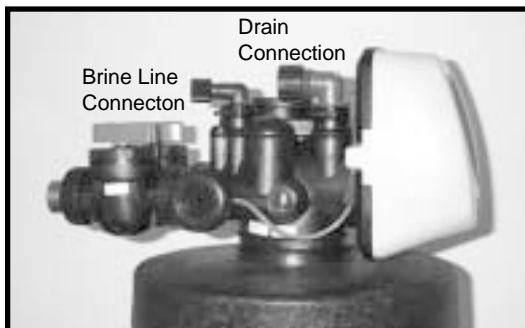
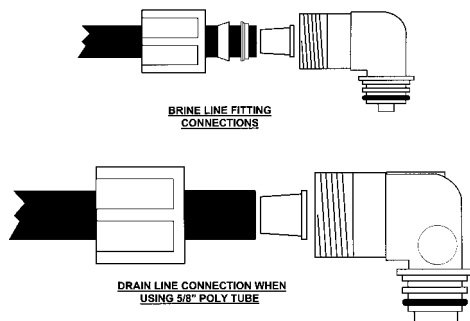


Figure 6a

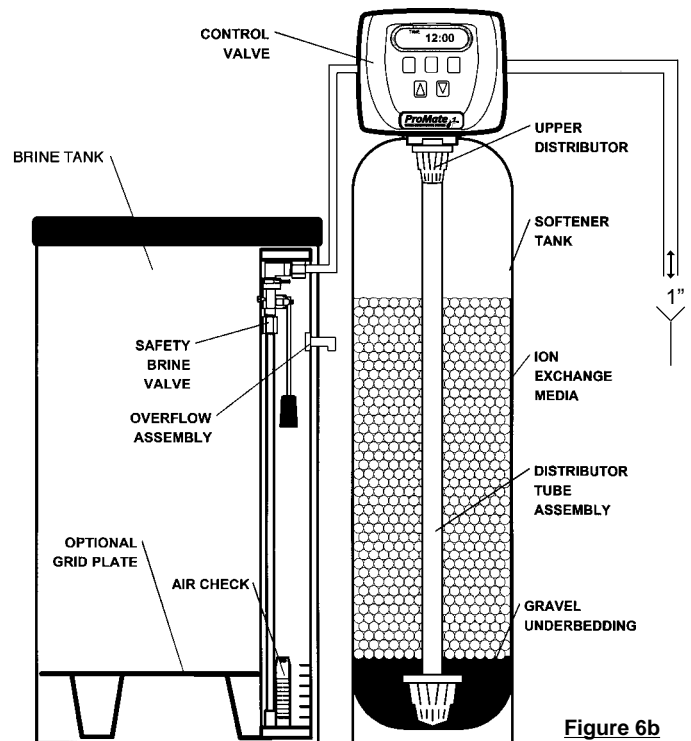


Figure 6b

PROGRAMMING

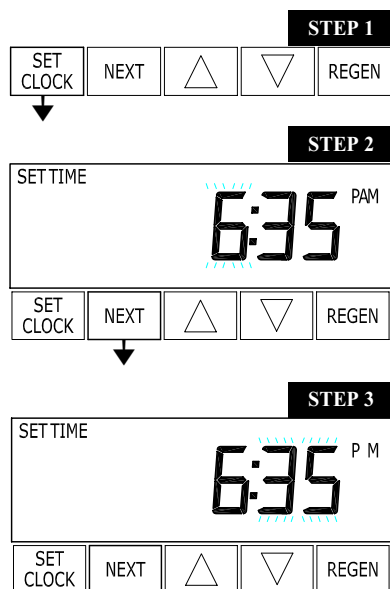
Initial Start Up

The initial start up will probably be done by the technician installing the softener system. If not, the following instructions will step you through the process.

1. Complete all plumbing connections: inlet, outlet, drain line and brine line. Do not add salt at this time.
2. Place the bypass valve in the bypass position. (See figure 3 page 4) Turn on the main water supply. Open a cold soft water faucet to flush the piping of any air and/or foreign material. Run until the water is clear.
3. Manually add 6 inches of water to the brine tank.
4. Now plug the transformer into a 110-volt receptacle. (Be certain the outlet is uninterrupted.) Within 5 seconds the control will automatically align itself into the softening mode and the display will flash 12:00 (am). (Figure 7, page 6).
5. Set the time of day. (figure 8, page 7)
6. Push REGEN button and hold it down for 3 seconds. The system will advance to the "First" position. (Note: Depending on how the system is programmed it could read backwash, rinse, brine or fill). Keep pushing REGEN button until "Rinse" shows in the lower right hand corner of display. Slowly place the by-pass into the "diagnostic mode" (see fig 4, page 5). Run water to the drain until it runs clear. Return the by-pass valve to the by-pass position (fig 3, page 5). Push REGEN button until "Time" appears in upper left hand corner of display.
7. Once again, push REGEN button and hold down for 3 seconds. Keep pushing REGEN button until "Back-wash" appears. Slowly place the by-pass valve into

the "Diagnostic Mode" 1/2 way. Allow water to slowly fill the mineral tank. When a solid stream of water starts coming out of the drain line, open the by-pass inlet valve all the way and allow to run out the drain until water clears. Then slowly place the by-pass into the "normal operation" mode by opening the outlet side of by-pass valve, figure 2, page 4.

8. Press the regen button until LED display says "BRINE".



SET TIME OF DAY

Step 1 - Press SET CLOCK.

Step 2 - Current Time (hour): Set the hour of the day using ▲ or ▼ buttons. AM/PM toggles after 12. Press NEXT to go to step 3.

Step 3 - Current Time (minutes): Set the minutes of day using ▲ or ▼ buttons. Press NEXT to exit Set Clock. Press REGEN to return to previous step.

Power Loss - If the power goes out for less than two hours, the system will automatically reset itself. If an extended power outage occurs, the time of day will flash on and off which indicates the time of day should be reset. The system will remember the rest of the program settings. Do not forget to reset for daylight savings time.

Figure 9

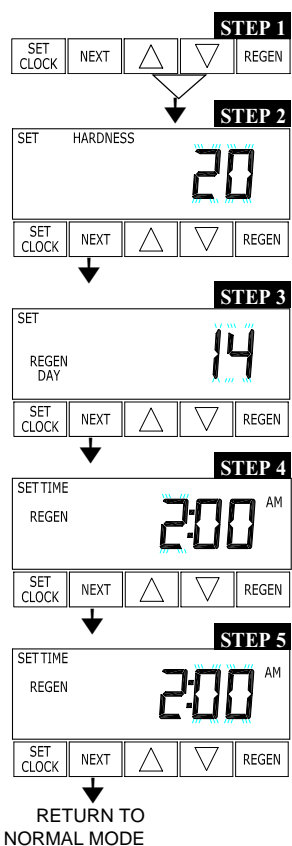


Figure 10a

INSTALLER DISPLAYS/SETTINGS

Step 1 - Press NEXT and ▲ simultaneously for 3 seconds.

Step 2 - Hardness: Set the amount of total compensated hardness in grains (hardness as calcium carbonate) per gallon using ▲ or ▼ buttons. The default is 20 with value ranges from 1 to 150 in 1 grain increments. Note: The grains per gallon should be increased if soluble iron needs to be reduced. Add 3 grains of hardness for each ppm of iron present. If this display shows nA - , then system is either set-up in "time clock" or "filter" modes. (See page 23). Press NEXT to go to Step 3. Press REGEN to exit Installer Displays/Settings.

Step 3 - Day Override: This sets the number of days between regenerations. If value set to "oFF" regeneration initiation is based solely on gallons used. If value is set as a number (allowable range from 1 to 28) a regeneration initiation will be called for on that day even if sufficient number of gallons were not used to call for a regeneration. Set Day Override using ▲ or ▼ buttons:

- number of days between regeneration (1 to 28); or
- "oFF"

See figure 12a & b, page 10-11, for more detail on softener setup. Press NEXT to go to step 4. Press REGEN to return to previous step.

Step 4 - Next Regeneration Time (hour): Set the hour of day for regeneration using ▲ or ▼ buttons. AM/PM toggles after 12. The default time is 2:00 a.m. This display will show "REGEN" on 0 GAL if system is set for immediate regeneration. See table 6, page 19. Press NEXT to go to step 5. Press REGEN to return to previous step.

Step 5 - Next Regeneration Time (minutes): Set the minutes of day for regeneration using ▲ or ▼ buttons. This display will not be shown if system is set for immediate regeneration. Press NEXT to exit Installer Displays/Settings. Press REGEN to return to previous step.

SET SALT MONITOR OPTION

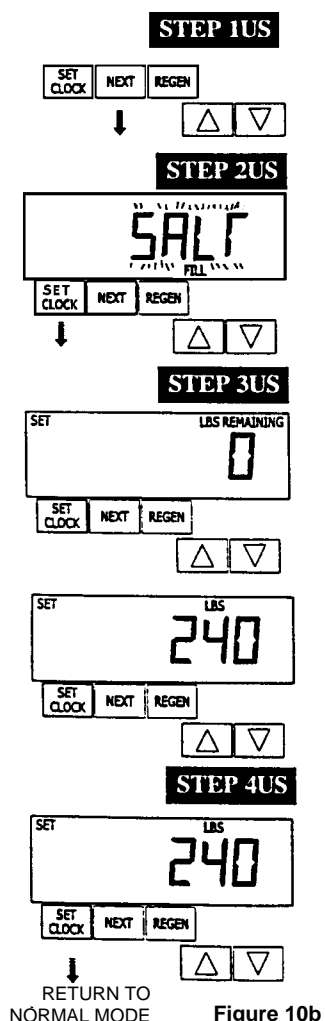


Figure 10b

NOTE: This screen will not appear if system is set up as a filter or the 'set low salt warning' is set to off. See dealer for details

Step 1US - Press the NEXT button until SALT appears in the display. It does not matter if the SALT display alternates with the LBS REMAINING display.

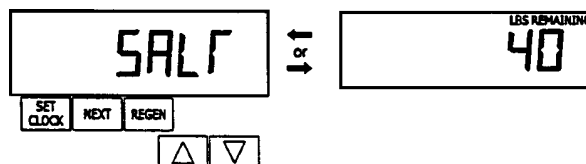
Step 2US - Press SET CLOCK

Step 3US - Set LBS REMAINING: Use the ▼ or ▲ button to adjust the pounds remaining in the brine tank.

NOTE: Estimate the pounds of salt in the brine tank and add it to the amount of salt added to the brine tank. The example at the left would indicate 200 lbs. of salt being added to a brine tank that has 40 lbs. remaining.

Step 4US - Press SET CLOCK to exit Adding Salt.

NOTE: The salt used per regeneration setting can be set in increments of 0.1 pounds, but LBS REMAINING screen will round up or down to the closest whole number.



Once the salt remaining as gone below the set point the display will automatically flash Salt Fill.

Regeneration Mode

Typically a system is set to regenerate at a time of low water usage. An example of a time with low water usage is when the household is asleep. If there is a demand for water when the system is regenerating, untreated water will be supplied.

When the system begins to regenerate, the display will change to include information about the step of the regeneration process and the time remaining for that step to be completed. The system runs through the steps automatically and will reset itself to provide treated water when the regeneration has been completed.

Manual Regeneration

Sometimes there is a need to regenerate the system, sooner than when the system calls for it, usually referred to as manual regeneration. There may be a period of heavy water usage because of guests or a heavy laundry day.

To initiate a manual regeneration at the preset delayed regeneration time, press and release "REGEN". The words "REGEN TODAY" will flash on the display to indicate that the system will regenerate at the preset delayed regeneration time. If you pressed the "REGEN" button in error, pressing the button again will cancel the request.

To initiate a manual regeneration immediately, press and hold the "REGEN" button for three seconds. The system will begin to regenerate immediately.

The request cannot be cancelled. You must cycle all the way through the cycles to make it stop. PLEASE NOTE: This will reset the meter.

Note: If the salt keeper does not contain salt. Fill with salt and wait at least two hours before regenerating.

Regeneration Step #2
(shows time remaining in regen step is 8:22)

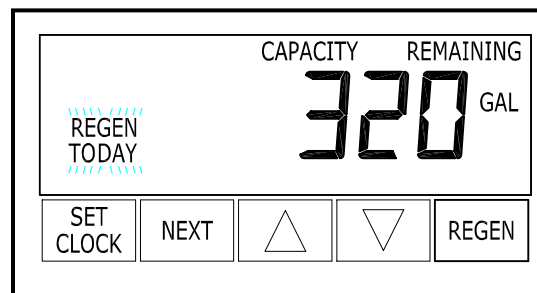
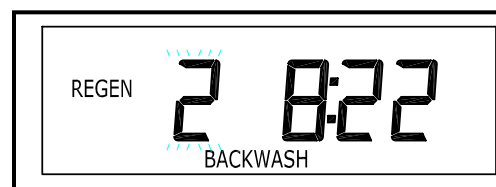
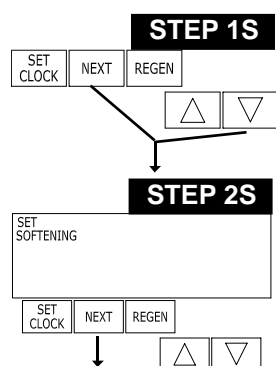


Figure 11

CYCLE TIME ADJUSTMENTS

Normally it is not recommended to adjust the lengths of the cycle times. However, certain water conditions may dictate adjustments. This should only be done from the recommendation of a water conditioning professional. The following charts shows the upper and lower limits of each cycle.

Cycle Options	Units	Lower/Upper Limit	Factory Setting
Fill	Lbs.	0.1 to 99.9	See Page 20
Softening (Service)	Minutes	1 to 999	120
Backwash	Minutes	1 to 999	8
Brine	Minutes	1 to 999	60



STEP 1S – Press NEXT and ▼ simultaneously for 3 seconds. If screen in Step 2S does not appear in 5 seconds the lock on the valve is activated.

STEP 2S – Choose SOFTENING using ▼ or ▲ button. Press NEXT to go to Step 3S. Press REGEN to exit Softener System Setup.

STEP 3S – Select the time for the first cycle (which in this example is FILL) using the ▼ or ▲ button. Press NEXT to go to Step 4S. Press REGEN to return to previous step.

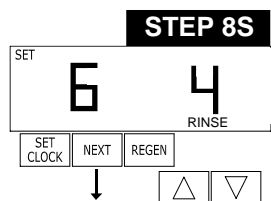
STEP 4S – Select the time for the second cycle (which in this example is SOFTENING) using ▼ or ▲ button. Press NEXT to go to Step 5S. Press REGEN to return to the previous step.

STEP 5S – Select the time for the third cycle (which in this example is BACK-WASH) using the ▼ or ▲ button. Press NEXT to go to Step 6S. Press REGEN to return to the previous step.

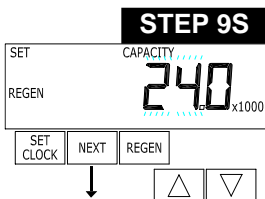
STEP 6S – Select the time for the fourth cycle (which in this example is dn BRINE) using the ▼ or ▲ button. Press NEXT to go to Step 7S. Press REGEN to return to the previous step.

STEP 7S – Select the time for the fourth cycle (which in this example is dn BRINE) using the ▼ or ▲ button. Press NEXT to go to Step 8S. Press REGEN to return to the previous step.

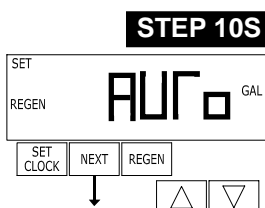
Figure 12a



STEP 8S – Select the time for the fourth cycle (which in this example is RINSE) using the ▼ or ▲ button. Press NEXT to go to Step 9S. Press REGEN to return to the previous step.



STEP 9S - Set Grain Capacity using the ▼ or ▲ button. The ion exchange capacity is in grains of hardness as calcium carbonate for the system based on the pounds of salt that will be used. Calculate the pounds of salt using the fill time previously selected. The allowable grains capacity range varies from 5,000 to 200,000 grains. The increment increase is 500 for the range from 5000 to 30,000; 1000 for the range of 30,000 to 100,000; and 2000 for the range of 100,000 to 200,000. Grains capacity is affected by the fill time. The grains capacity for the selected fill time should be confirmed by testing. The capacity and hardness levels entered are used to automatically calculate reserve capacity when gallon capacity is set to AUTO. Press NEXT to go to Step 10S. Press REGEN to return to previous step.

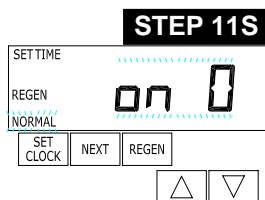


STEP 10S – set Gallons Capacity using ▼ or ▲ button. If value is set to:

- “AUTO” gallon capacity will be automatically calculated and reserve capacity will be automatically estimated;
- “oFF” regeneration will be based solely on the day override set (see Installer Display/Settings Step 3I); or
- as a number (allowable range 20 to 50,000) regeneration initiation will be based off the value specified.

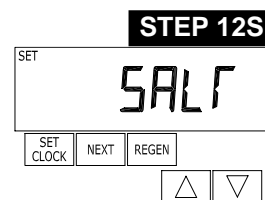
Increment increase is 20 for the range 20 to 1000, 50 for the range of 1000 to 10,000 and 100 for the range of 10,000 to 50,000.

If “oFF” or a number is used, hardness display will not be allowed to be set in Installer Displays/Settings Step 2I. See Table 8 for more detail. Press NEXT to go to Step 11S. Press REGEN to return to previous step.



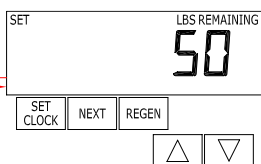
STEP 11S – Set Regeneration Time Options using the ▼ or ▲ button. If value is set to:

- “NORMAL” means regeneration will occur at the preset time;
 - “on 0” means regeneration will occur immediately when the gallons capacity reaches 0 (zero); or
 - “NORMAL + on 0” means regeneration will occur at one of the following:
 - the preset time when the gallons capacity falls below the reserve or the specified number of days between regenerations is reached, whichever comes first; or
 - immediately after 10 minutes of no water usage when the gallon capacity reaches 0 (zero).
- See page 23 for more options. Press NEXT to go to Step 12S. Press REGEN to return to previous step.



STEP 12S – Set Low Salt Warning using the ▼ or ▲ button. If value is set to:

- “oFF” no low salt level warning will appear for the user, or
- a specific value “FILL SALT” will flash on the display when the calculated remaining pounds of salt falls below that level. Allowable values range from 10 to 400 pounds in 10 pound increments.



Press NEXT to exit Softener System Setup. Press REGEN to return to previous step.

Figure 12b

WATER SOFTENER DISINFECTION

The materials of construction of your water softener will not support bacterial growth nor will these materials contaminate a water supply. However, the normal conditions existing during shipping, storage, and installation indicate the advisability of disinfecting a softener after installation, before the softener is used to treat potable water. In addition, during normal use a softener may become fouled with organic matter or in some cases, with bacteria from the water supply.

Therefore, every water softener should be disinfected after installation, some will require periodic disinfection during their normal life. Disinfect as follows:

SODIUM HYPOCHLORITE (household bleach)

5.25% SODIUM HYPOCHLORITE solutions are available under such trade names such as Clorox, Linco, Bo Peep, White Sail and Eagle Brand Bleach. If stronger solutions are used, such as those sold for commercial laundries, adjust the dosage accordingly.

1. Dosage:
 - a. Softening resin; 1.2 fluid ounce per cubic foot of mineral (see page 18).
2. Add the required amount of hypochlorite solution to the brine well of the brine tank.
 - a. Proceed with the normal regeneration. Press regen and allow the water softener to go through a normal regeneration.

WATER SOFTENER DRAINING PROCEDURE

In cold weather climates it is common for plumbing systems that are not in use to be "winterized" or drained of all water to prevent any damage that may be caused by the excessive expansion of water when it freezes. To prevent damage to a water softener it must be **properly** drained also. A simple way to properly drain or winterize a water softener is to use compressed air to force all of the water out of the softener mineral tank. The following procedure will explain the process:

- 1) Initiate the softener into a manual regeneration cycle. After the refill cycle, advance control to backwash and allow it to complete the backwash cycle (this will clean the media) and start into the brine-draw cycle. Allow the regeneration to continue in the brine draw cycle until the brine is drawn out of the salt keeper and the air check at the bottom of the brine pick-up tube shuts off. At this time no more brine is introduced into the softener and the slow rinse process begins.
- 2) Turn the water supply inlet and outlet valves off to the water softener as soon as the air check shuts off and no more brine is being drawn into the softener (at the beginning of the slow rinse process).
- 3) Unplug the electric power leaving the softener control valve in the brine draw cycle.
- 4) Disconnect the brine tube at the top of the salt keeper and force air into the brine tube toward the softener mineral tank and control valve. The air will force the brine/water solution that was drawn into the mineral tank out to drain through the control valve drain line. (An air compressor blow gun attachment with a portable air compressor works well.)

CAUTION: You do not want to apply any more pressure than necessary to force the brine/water out of the mineral tank.

The small amount of brine/water that may be left in the mineral tank will not expand enough to cause any damage to the softener when it freezes.

If your softener is equipped with an optional bottom drain on the mineral tank, you will have to follow all of the same procedures with the exception of the need for compressed air. With the brine tube disconnected from the salt keeper, raise it to a level above the softener control valve and temporarily secure it in this position. Now open the drain valve at the bottom of the mineral tank and allow all brine/water to drain from the mineral tank.

CAUTION: If a hose is connected to the drain valve to direct the brine/water to a floor drain be sure it runs downward and is unobstructed. When brine/water quits running at the drain, be sure to leave the drain valve open until you start the system up again.

- 5) At this time the salt keeper has very little water left in it. What liquid is left in the salt keeper is saturated brine, provided that there is still salt left in the tank. Saturated brine will not freeze solid and cause any damage and does not have to be drained any further from the brine tank.

If there is no salt left in the salt keeper when the system is drained we recommend dumping all of the water out of the brine tank at this time. See brine tank cleaning instructions. (#3 in miscellaneous section, below)
- 6) **CAUTION:** It is important at this time to be assured that the inlet/outlet water supply piping is properly drained. Depending on how the water supply piping was routed to the water softener control valve, a water loop or trap may have been created. Sometimes drain valve(s) are installed at the bottom of the loop to assure all water can be drained out. If not it may be necessary to disconnect the control valve from the piping system and open the inlet/outlet valve(s) to allow all the water to drain from the piping. This should be done when the rest of the plumbing system is drained.
- 7) Draining or winterizing of your softener is complete. Refer to the start-up procedures on page 6 when you are ready to start your softener.

MISCELLANEOUS

1. Salt Usage: See your water conditioning professional for a recommendation on the best type of salt for your application.
2. Brine Tank Cleaning:
 - a. Remove brine tank cover.
 - b. Scoop out as much old salt as possible.
 - c. Disconnect brine tubing from safety brine valve at brine well.
 - d. Remove safety brine valve from brine well.
 - e. Place one hand in brine well to hold overflow nut and remove 2 piece overflow.
- f. Remove optional brine well and grid plate, if used, from saltkeeper.
- g. Remove any remaining salt and/or impurities from brine tank.
- h. Using clean water and a brush or rag, wipe and rinse inside of brine tank. Also wipe and rinse the grid plate and brine well.
- i. Reassemble brine tank reversing steps c - f. Note: If grid plate is used and it is damaged or cracked, replace with new one.
- j. Put brine tank in place making sure there is no debris or foreign material beneath it.
- k. Reconnect brine tubing to safety brine valve.
- l. Manually add 6 inches of water to the saltkeeper (or to approximately 1" above the grid plate, if used).
- m. Add new salt. Important: Do not add the old salt which was removed earlier unless it is clean and not mushy. We recommend using new salt.
- n. Follow the disinfection instructions found on page 8.
- o. Put on brine tank cover.

TROUBLE SHOOTING

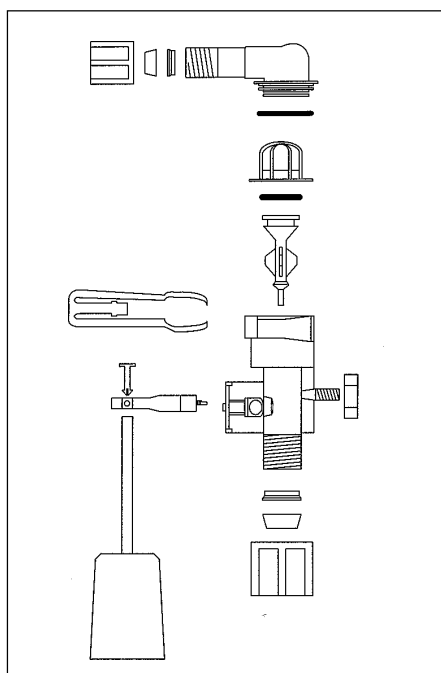
PROBLEM	CAUSE	CORRECTION
1. ERROR followed by code number	<p>A. Control valve has just been serviced</p> <p>B. Foreign matter is lodged in control valve</p> <p>C. High drive forces on piston</p> <p>D. Control valve piston not in home position</p> <p>E. Motor not inserted fully to engage pinion, motor wires broken or disconnected, motor failure</p> <p>F. Drive gear label dirty or damaged, missing or broken gear</p> <p>G. Drive bracket incorrectly aligned to back plate</p> <p>H. PC board is damaged or defective</p> <p>I. PC board incorrectly aligned to drive bracket</p>	<p>A. Press NEXT and REGEN for 3 seconds or unplug power source jack (black wire) and plug back in to reset control valve</p> <p>B. Check piston and spacer stack assembly for foreign matter</p> <p>C. Loosen drive cap assembly 1/4 turn or replace</p> <p>D. Press NEXT and REGEN for 3 seconds or unplug power source jack (black wire) and plug back in to reset control valve</p> <p>E. Check motor and wiring. Replace motor if necessary</p> <p>F. Replace or clean drive gear</p> <p>G. Reseat drive bracket</p> <p>H. Replace PC board</p> <p>I. Ensure PC board is correctly snapped on to drive bracket</p>
<p>Error Code 1001 - Unable to recognize start of regeneration</p> <p>Error Code 1002 - Unexpected stall</p> <p>Error Code 1003 - Motor ran to long, timed out trying to reach next cycle position</p> <p>Error Code 1004 - Motor ran to long, timed out trying to reach home position</p> <p>If other Error Codes display contact the factory</p>		
2. Error Code 4003	<p>A. Possible low voltage through circuit board or miscommunication on board at start-up</p>	<p>A. Unplug power supply from board, re-apply power. If this does not solve the problem, replace PC board</p>
3. Control valve stalled in regeneration	<p>A. Motor not operating</p> <p>B. No electric power at outlet</p> <p>C. Defective transformer</p> <p>D. Defective PC board</p> <p>E. Broken drive gear or drive cap assembly</p> <p>F. Broken piston retainer</p> <p>G. Broken main or regenerant piston</p>	<p>A. Replace Motor</p> <p>B. Repair outlet our use working outlet</p> <p>C. Replace transformer</p> <p>D. Replace PC board</p> <p>E. Replace drive gear or drive cap assembly</p> <p>F. Replace drive cap assembly</p> <p>G. Replace main or regenerant piston</p>
4. Control valve does not regenerate automatically when REGEN button is depressed and held	<p>A. Transformer unplugged</p> <p>B. No electric power at outlet</p> <p>C. Broken drive gear or drive cap assembly</p> <p>D. Defective PC board</p>	<p>A. Connect transformer</p> <p>B. Repair outlet or use working outlet</p> <p>C. Replace drive gear or drive cap assembly</p> <p>D. Replace PC board</p>
5. Control valve does not regenerate automatically but does when REGEN button is depressed	<p>A. By-pass valve in bypass position</p> <p>B. Meter connection disconnected</p> <p>C. Restricted/stalled meter turbine</p> <p>D. Defective meter</p> <p>E. Defective PC board</p> <p>F. Set-up error</p>	<p>A. Put control valve in service position</p> <p>B. Connect meter to PC board</p> <p>C. Remove meter and check for rotation or foreign matter</p> <p>D. Replace meter</p> <p>E. Replace PC board</p> <p>F. Check control valve set-up procedure</p>
6. Time of day flashes on and off	<p>A. Power has been out more than two hours, the transformer was unplugged and then plugged back into the wall outlet, the transformer plug was unplugged and then plugged back into the board or the NEXT and REGEN buttons were pressed to reset the valve</p>	<p>A. Reset the time of day</p>
7. Softener delivers hard water.	<p>A. Bypass valve is open or faulty.</p> <p>B. No salt or low salt level in brine tank.</p> <p>C. Softener fails to draw brine.</p> <p>D. Excessive water usage.</p> <p>E. Insufficient brine level in brine tank.</p> <p>F. Resin level inadequate.</p> <p>G. Meter faulty.</p> <p>H. Raw water hardness fluctuation.</p>	<p>A. Close bypass valve or replace.</p> <p>B. Add salt to brine tank and maintain salt level above water level.</p> <p>C. See problem #11.</p> <p>D. Check gallon capacity settings.</p> <p>E. Check brine refill setting and refill flow restrictor for blockage.</p> <p>F. See problem #8.</p> <p>G. Test meter and clean or replace meter.</p> <p>H. Test raw water hardness and adjust settings to highest known hardness.</p>
8. Unit uses too much salt.	<p>A. Improper brine refill setting.</p> <p>B. Improper settings.</p> <p>C. Excessive water in brine tank.</p> <p>D. Leaking faucets, toilets, etc...</p>	<p>A. Check brine refill setting for proper salt dosage</p> <p>B. Check water hardness and reevaluate capacity setting specification</p> <p>C. See problem #10.</p> <p>D. Repair or replace those items.</p>

TROUBLE SHOOTING

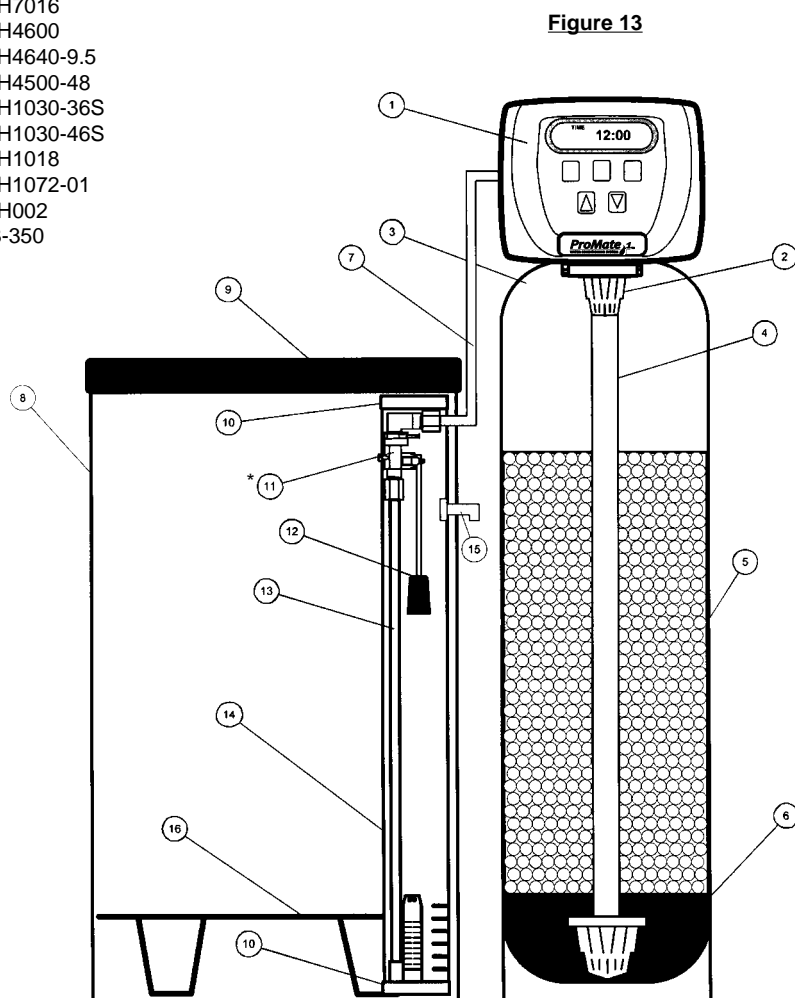
PROBLEM	CAUSE	CORRECTION
9. Loss of resin.	A. Backwash controller missing. B. Faulty distributor tube assembly. C. Air in water supply system.	A. Install backwash controller. B. Check distributor tube assembly for cracks or holes. C. 1. Check for leaks in brine lines, fittings, or air check. Repair or replace. 2. Install upper distributor. 3. Ensure that water supply system has an air eliminator.
10. Softener delivers salt water.	A. Low water pressure. B. Excessive water in brine tank. C. Wrong size injector.	A. Check incoming water pressure - Must remain at minimum of 25 psi. B. See problem #10. C. Install correct injector.
11. Excessive water in brine tank.	A. Plugged injector. B. Faulty piston assembly. C. Plugged or kinked drain line. D. Backwash flow controller closed off. E. Defective brine line flow control.	A. Remove injector and clean ports. B. Replace piston assembly. C. Inspect drain line for kinks or plugging. D. Check backwash flow controller. E. Replace brine refill flow control.
12. Softener fails to draw brine.	A. Injector is plugged. B. Faulty piston assembly. C. Brine line connection leak. D. Drain line plugged creating excess back pressure. E. Drain line too long or too high F. Low inlet pressure.	A. Remove injector and clean ports. B. Check piston assembly. C. Inspect brine line during refill cycle for leaks. D. Inspect drain line for blockage. E. Refer to drain line specifications. F. Increase inlet pressure to a minimum of 25 psi.
13. Continuous flow to drain.	A. Piston assembly failure. B. Motor failure. G. Circuit board failure.	A. Replace piston assembly. B. Replace motor. G. Replace circuit board.
14. Loss of water pressure.	A. Iron build-up in resin. B. Resin bed fouled with sand or sediment. C. Resin bed mushing due to high amount of oxidizers in water supply (chlorine).	A. See problem #14. B. Rebed softener and install sediment filter ahead of softener. C. Rebed softener. Install dechlorinator system
15. Iron in softened water.	A. Iron has fouled resin bed. B. Iron is not in a soluble state. C. Prefilter failure. D. Iron level excessive. E. Control fails to regenerate.	A. Use iron reducing resin cleaner to cleanse resin bed, and increase salt dosage or regenerate more frequently. Install an Iron Curtain System ahead of the softener. B. Test water to determine type of iron, install iron reduction system. C. Check prefilter. D. Install iron reduction system. E. See problem #4.
16. Control does not display time of day	A. Transformer unplugged B. No electric power at outlet C. Defective transformer D. Defective PC board	A. Connect power B. Repair outlet or use working outlet C. Replace transformer D. Replace PC board
17. Control does not display correct time of day	A. Switched outlet B. Power outage C. Defective PC board	A. Use uninterrupted outlet B. Reset time of day C. Replace PC board
18. No "softening" or "filtering" display when water is flowing	A. Bypass valve in bypass position B. Meter connection disconnected C. Restricted/stalled meter turbine D. Defective meter E. Defective PC board	A. Put bypass valve in service position B. Connect meter to PC board C. Remove meter and check for rotation, clean foreign material D. Replace meter E. Replace PC board
19. Control valve regenerates at wrong time of day	A. Power outages B. Time of day not set correctly C. Time of regeneration incorrect D. Control valve set at "on 0" (immediate regeneration) E. Control valve set at NORMAL + on 0	A. Reset control valve to correct time of day B. Reset to correct time of day C. Reset regeneration time D. Check control valve set-up procedure regeneration time option (see table 6, page 19) E. Check control valve set-up procedure regeneration time option (see table 6, page 19)

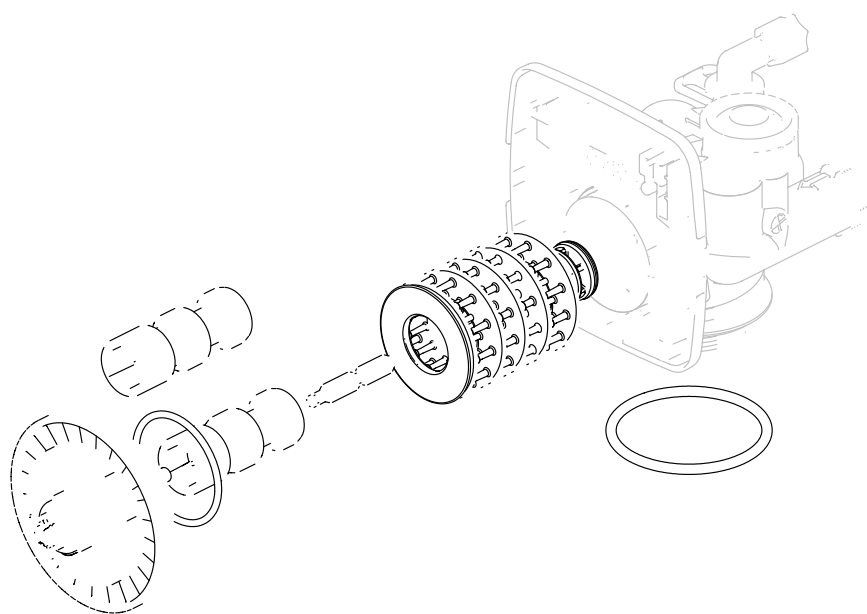
PROMATE-1 CONDITIONER & SALT KEEPER ASSEMBLIES

Item	Description	Qty	Part #		
1	Control Center-Metered	1	60-PM1-ED (see pages 13-17 for detailed components)		
	Control Center-Time Clock	1	60-PM1-TC		
2	Top Diffuser	1	9-D1203		
3&4	Mineral Tank Assembly		Item 3 only	Item 4 only	Not Shown
			Mineral Tank	Distributor Assy	Granite Tank Jacket
	PM-24 8 x 44	1	19-RT0844NAT	9-93243-RT	99-162-7
	PM-32 9 x 48	1	19-RT0948NAT	9-93247-RT	99-164-7
	PM-48 10 x 44	1	19-RT1044NAT	9-93243-RT	99-166-7
	PM-48 10 x 54	1	19-RT1054NAT	9-93253-RT	99-168-7
	PM-64 13 x 54	1	19-RT1354NAT	9-93254-RT	
	PM-96 14 x 65	1	19-RT1465NAT	9-93272-RT	Tank Adapter
	PM-128 16 x 65	1	19-RT1665NAT-4	9-93272-RT	19-020-RT
	PM-160 18 x 65	1	19-RT1865NAT-4	9-TO418 (Hub & Lateral)	19-020-RT
	PM-192 20 x 62	1	19-RT2062NAT-4	9-TO421 (Hub & Lateral)	19-020-RT
5	Ion Exchange Resin	*	1-A4068	*See Specifications for amount	
6	Underbedding	*	1-A8072	*See Specifications for amount	
7-15a	Salt Keeper Assy (18x40)-Granite	1	3-SB05-7		
b	Salt Keeper Assy (24x41)	1	3-S405-3		
c	Salt Keeper Assy (24x50)	1	3-S505-3		
7	3/8" x 6" Brine Line	1	2-H1023-06		
8a	18x40 Salt Keeper Tank-Granite	1	2-1840GR		
b	24x41 Salt Keeper Tank-Black	1	2-2441BK		
c	24x50 Salt Keeper Tank-Black	1	2-2450BK		
9a	Salt Keeper Cvr 18x40	1	2-G2191-60		
b	Salt Keeper Cvr 24x41		Included with 8b		
c	Salt Keeper Cvr 24x50		Included with 8c		
10-14 a	Safety Brine Valve Assy 41"		2-H4700-39		
b	Safety Brine Valve Assy 50"		2-H4700-46		
10	Cap, Brine Well	2	2-H7016		
11*	Safety Brine Valve	1	2-H4600		
12	Float Assembly	1	2-H4640-9.5		
13	Air Check	1	2-H4500-48		
14 a	Brine Well 40"-41"	1	2-H1030-36S		
b	Brine Well 50"	1	2-H1030-46S		
15	2-Piece Overflow	1	2-H1018		
16 a	Grid Plate 18" (optional)	1	2-H1072-01		
b	Grid Plate 24" (optional)	1	2-H002		
-	Owners Manual	1	73-350		



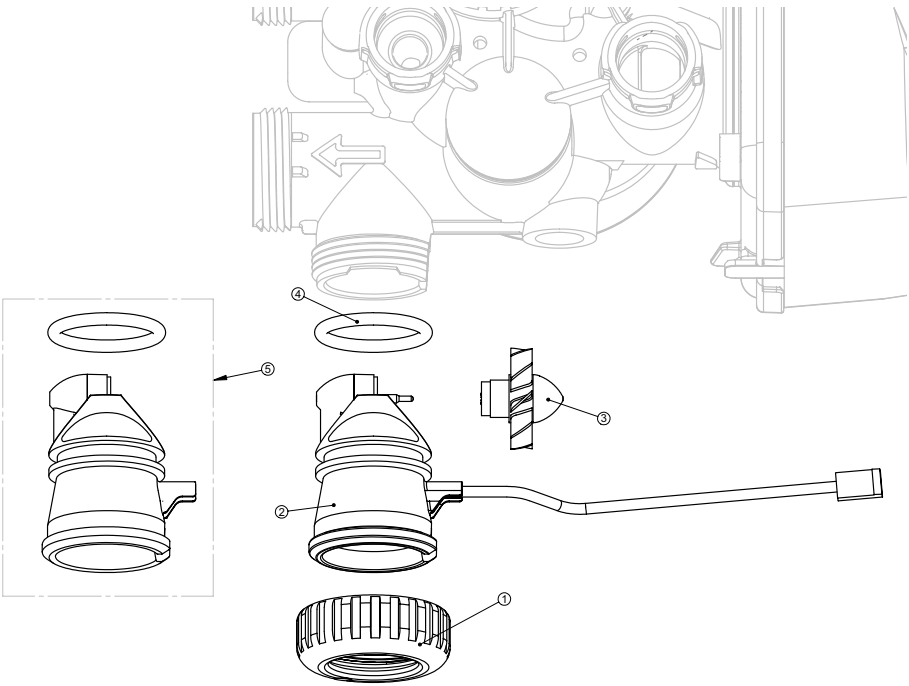
*Safety Brine Valve (Item 11)
Drawing for service only
Must be ordered complete







WATER METER AND METER PLUG



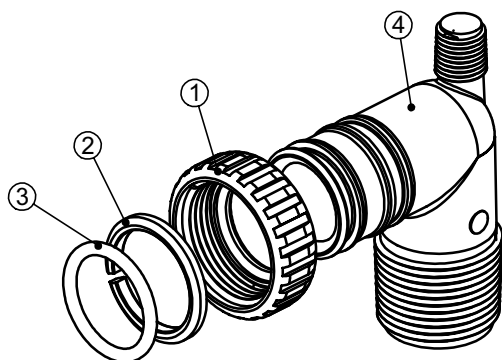
BYPASS VALVE



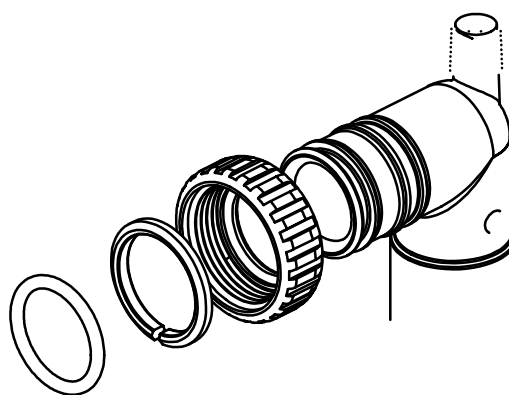
Not Shown	15-V3191-01	Bypass 90° Vert. Assy.	
1	15-V3151	Nut 1" Quick Connect	2
2	15-V3150	Split Ring	2
3	15-V3105	O-Ring 215	2
11*	15-V3191-01	Bypass Verticle Adpt. Assy (set of 2)	1

INSTALLATION FITTING ASSEMBLIES

ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	15-V3151	Nut 1" Quick Connect	2
2	15-V3150	Split Ring	2
3	15-V3105	O-Ring 215	2
4	15-V3149	Fitting 1" PVC Male NPT Elb.	2
1-4	15-V3007	Fitting 1" PVC Male NPT Asy. (Set of 2)	1

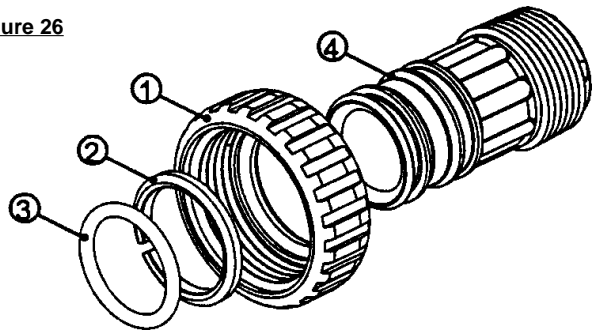


ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	15-V3151	Nut 1" Quick Connect	2
2	15-V3150	Split Ring	2
3	15-V3105	O-Ring 215	2
4	15-V3189	Fitting 3/4" & 1" PVC Solv. 90	2
1-4	15-V3007-01	Fitting 3/4" & 1" PVC Solv 90 (set of 2)	1



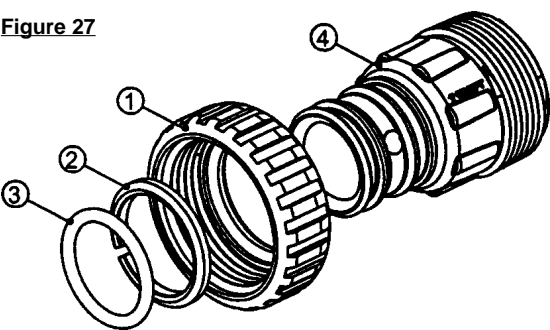
ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	15-V3151	Nut 1" Quick Connect	2
2	15-V3150	Split Ring	2
3	15-V3105	O-Ring 215	2
4	15-V3164	Fitting 1" Plastic Male NPT	2
1-4	15-V3007-04	Fitting 1" Male NPT Asy. (Set of 2)	1

Figure 26



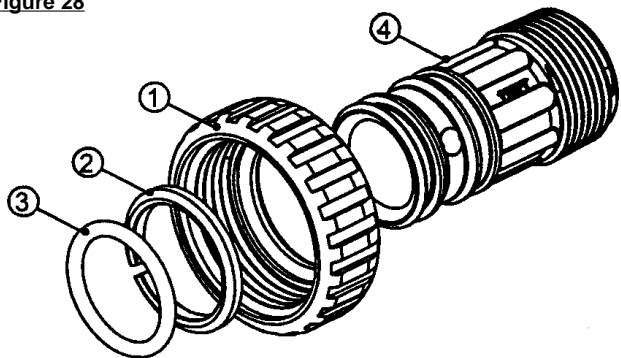
ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	15-V3151	Nut 1" Quick Connect	2
2	15-V3150	Split Ring	2
3	15-V3105	O-Ring 215	2
4	15-V3317	Fitting 1-1/4" Plastic Male NPT	2
1-4	15-V3007-05	Fitting 1-1/4" Male NPT (Set of 2)	1

Figure 27



ITEM NO.	ORDER NO.	DESCRIPTION	QTY.
1	15-V3151	Nut 1" Quick Connect	2
2	15-V3150	Split Ring	2
3	15-V3105	O-Ring 215	2
4	15-V3316	Fitting 1" Plastic Male BSPT	2
1-4	15-V3007-06	Fitting 1" Male BST Asy. (Set of 2)	1

Figure 28



PROMATE 1 SYSTEM SPECIFICATIONS

ED-“ELECTRONIC DEMAND”

TC-“TIME CLOCK”

MODEL	PM1-24ED PM1-24TC	PM1-32ED PM1-32TC	PM1-32-10ED PM1-32-10TC	PM1-48ED PM1-48TC	PM1-64ED PM1-64TC	PM1-96ED PM1-96TC	PM1-128ED PM1-128TC	PM1-160ED PM1-160TC	PM1-192ED PM1-192TC
FACTORY PRESET MINUTES									
Backwash-1; Min	8	8	8	8	8	8	8	8	8
Brine; Min.	60	60	60	60	60	60	60	60	60
Backwash-2; Min	8	8	8	8	8	8	8	8	8
Fast Rinse; Min	4	4	4	4	4	4	4	4	4
Refill-Minutes									
-High Efficiency	3.0	4.0	4.0	6.0	8.0	12.0	16.0	20.0	24.0
-Low Salting	4.0	5.3	5.3	8.0	10.7	16.0	21.3	26.7	32.0
-Medium Salting*	5.0	6.7	6.7	10.0	13.5	20.0	27.0	33.5	40.0
-High Salting	7.5	10.0	10.0	15.0	20.0	30.0	40.0	50.0	60.0
Refill-Lbs of Salt									
-High Efficiency	4.5	6.0	6.0	9.0	12.0	18.0	24.0	30.0	36.0
-Low Salting	6.0	8.0	8.0	12.0	16.0	24.0	32.0	40.0	48.0
-Medium Salting*	7.5	10.0	10.0	15.0	20.0	30.0	40.0	50.0	60.0
-High Salting	11.5	15.0	15.0	22.5	30.0	45.0	60.0	75.0	90.0
Capacity Grains									
-High Efficiency	17,200	22,930	22,930	34,400	45,870	68,810	91,750	114,690	137,620
-Low Salting	19,980	26,650	26,650	39,970	53,300	79,950	106,600	133,250	159,900
-Medium Salting*	21,040	28,060	28,060	42,090	56,120	84,180	112,240	140,300	168,360
-High Salting	24,230	32,310	32,310	48,460	64,620	96,930	129,240	161,550	193,860
Water Usage (U.S. Gallons)									
At Factory Settings									
and 40 psi Inlet Pressure	44	54	68	69	127	134	179	245	272
Service Flow Rate;									
Flow Rate @ 10 psi	9.8	10.1	11.3	10.5	14.2	14.4	15.1	17.3	17.8
Flow Rate @ 15 psi	13.1	13.0	14.5	14.1	18.2	19.2	20.1	22.7	23.1
Mineral; Cu Ft.	0.75	1	1	1.5	2	3	4	5	6
Underbedding;lbs	8	11	14	14	40	40	45	50	75
Mineral Tank Dimen.	8x44	9x48	10x44	10x54	13x54	14x65	16x65	18x65	20x62
Brine Tank Dimen.	18x40	18x40	18x40	18x40	18x40	24x41	24x41	24x50	24x50
Drain Line Flow Con	1.3	1.7	2.2	2.2	4.2	4.2	5.3	7.5	7.5
Brine Line Flow Con	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Injector; color	C-Violet	D-Red	E-White	E-White	G-Yellow	H-Green	I-Orange	J-L. Blue	K-L. Green

*Factory Settings are in bold

PROGRAMMING OPTIONS

Reserve Gallons	Regeneration Type	Days Override	
AUTO	NORMAL	oFF	Reserve capacity automatically estimated. Regeneration occurs when gallons capacity falls below the reserve capacity at the next Regen Set Time.
AUTO	NORMAL	1 to 24	Reserve capacity automatically estimated. Regeneration occurs at the next Regen Set Time when gallons capacity falls below the reserve capacity or the specified number of days between regenerations is reached.
20 to 50,100	NORMAL	oFF	Reserve capacity <u>not</u> automatically estimated. Regeneration occurs at the next Regen Set Time when gallons capacity reaches 0.
oFF	NORMAL	1 to 24	Reserve capacity <u>not</u> automatically estimated. Regeneration occurs at the next Regen Set Time when the specified number of days between regenerations is reached.
20 to 50,100	NORMAL	1 to 24	Reserve capacity <u>not</u> automatically estimated. Regeneration occurs at the next Regen Set Time when gallons capacity reaches 0 or the specified number of days between regenerations is reached.
AUTO	On 0	oFF	Reserve capacity <u>not</u> automatically estimated. Regeneration occurs immediately when gallons capacity reaches 0. Time of regeneration will not be allowed to be set because of regeneration will always occur when gallons capacity reaches 0.
20 to 50,100	On 0	oFF	Reserve capacity <u>not</u> automatically estimated. Regeneration occurs immediately when gallons capacity reaches 0. Time of regeneration will not be allowed to be set because regeneration will always occur on 0.
AUTO	NORMAL on 0	oFF	Reserve capacity automatically estimated. Regeneration occurs when gallons capacity falls below the reserve capacity at the next Regen Set Time or regeneration occurs immediately after 10 minutes of no water usage when gallon capacity reaches 0.
AUTO*	NORMAL on 0*	1 to 24 *14	Reserve capacity automatically estimated. Regeneration occurs at the next Regen Set Time when gallons capacity falls below the reserve capacity or the specified number of days between regenerations is reached or regeneration occurs immediately after 10 minutes of no water usage when gallon capacity reaches 0.
20 to 50,100	NORMAL	1 to 24	Reserve capacity <u>not</u> automatically estimated. Regeneration occurs at the next Regen Set Time when specified number of days between regenerations is reached or regeneration occurs immediately after 10 minutes of no water usage when gallon capacity reaches 0.

*Factory settings in bold

GENERAL SPECIFICATIONS

OPERATING PRESSURES

Minimum/Maximum 20 psi-120 psi

OPERATING TEMPERATURES

Minimum/Maximum 40° - 110° F

METER

Accuracy ±5%
Flow Rate Range 0.25 - 27 GPM
Gallon Range 20 - 50,100

DIMENSIONS

Drain Line 3/4" or 1" NPT
Brine Line 3/8" Poly Tube
Electrical Current Draw and Voltage 0.5A 110v

Compatible with the following regenerants or chemicals: Sodium chloride, potassium permanganate, sodium bisulfite, sodium hydroxide, hydroxide, hydrochloric acid, chlorine and chloramines.

PROMATE-1 WARRANTY

Hellenbrand Water Conditioners, Inc., warrants to the original consumer/purchaser against defects in material and/or workmanship from the date of the original installation as follows:

For a Period of **FIVE YEARS**: The control valve including electrical parts, internal parts, and valve body.

For a Period of **TEN YEARS**: Mineral tanks, 6" Diameter - 13" Diameter.

For a Period of **FIVE YEARS**: Mineral tanks, 14" - Up.

For a Period of **FIVE YEARS**: The salt storage/cabinet tank.

For a Period of **ONE YEAR**: Any other component.

Any parts used for replacement are warranted for the remainder of the original warranty period.

If a part described above becomes defective within the specified period, you should notify your Hellenbrand ProMate-1 dealer and arrange a time during normal business hours for the dealer to inspect the water conditioner on your premises. Any part found defective within the terms of this warranty will be repaired or replaced by him. You pay only freight from our factory and local dealer charges.

THIS WARRANTY DOES NOT COVER defects caused by accident, fire, flood, Act of God, misuse, misapplication, neglect, alteration, installation or operation contrary to our printed instructions, or repair or service by anyone other than the factory or authorized Hellenbrand ProMate-1 dealer.

Our performance specifications are furnished with each water conditioning unit. **ANY EXPRESS WARRANTY NOT PROVIDED HEREIN, AND ANY REMEDY FOR BREACH OF CONTRACT WHICH BUT FOR THIS PROVISION MIGHT ARISE BY IMPLICATION OR OPERATION OF LAW, IS HEREBY EXCLUDED AND DISCLAIMED. THE IMPLIED WARRANTIES OF MERCHANTABILITY AND OF FITNESS FOR ANY PARTICULAR PURPOSE ARE EXPRESSLY LIMITED TO A TERM OF TWO (2) YEARS. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.**

As a manufacturer, we do not know the characteristics of your water supply or the purpose for which you are purchasing this water conditioner. Please understand the quality of water supplies may vary seasonally or over a period of time, and that your water usage rate may vary as well. Water characteristics can also change considerably if your water conditioner is moved to a new location. For these reasons, we assume no liability for the determination of the proper equipment necessary to meet your requirements and we do not authorize others to assume such obligations for us.

UNDER NO CIRCUMSTANCES SHALL HELLENBRAND WATER CONDITIONERS, INC., BE LIABLE TO PURCHASER OR TO ANY OTHER PERSON FOR ANY INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES OR FOR ANY OTHER LOSS, DAMAGE, OR EXPENSE OF ANY KIND, INCLUDING LOSS OF PROFITS, WHETHER ARISING OUT OF BREACH OF WARRANTY, BREACH OF CONTRACT, OR OTHERWISE.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.